

swissbit®

Product Fact Sheet

Industrial / Automotive e•MMC Memory

EM-30 Series

JEDEC e•MMC 5.1 compliant,
BGA 100 ball

Industrial / Automotive
Temperature Grade

Date: April 25, 2025
Revision: 1.02



Product Summary

- **Capacities:** 16 GBytes, 32 GBytes, 64 GBytes, 128 GBytes, 256 GBytes
- **Operating Temperature Range¹:**
 - Industrial Operating Temperature (Tambient) -40 °C to 85 °C
 - Automotive Operating Temperature (Tambient) -40 °C to 105 °C

Product Features

- Fully compliant with JEDEC eMMC 5.1 Standard (JESD84-B51)²
- 100-ball BGA, 1.0mm pitch, 14 x 18mm, RoHS compliant
- 3D TLC NAND base technology
- Industrial Operating Temperature -40 °C to 85 °C / Automotive Operating Temperature -40 °C to 105 °C
- Multiple 3D TLC or enhanced/reliable mode partitions user configurable according to eMMC Spec 5.1
- High performance eMMC 5.1 specification
 - Eleven-wire bus (clock, Data Strobe, 1 bit command, 8 bit data bus) and a hardware reset
 - Three different data bus width modes: 1-bit (default), 4-bit, and 8-bit
 - Clock frequencies 0-200MHz, High Speed Mode HS400
 - Command Queue Feature according to eMMC Spec 5.1
 - Up to 320MB/s sequential read and up to 220MB/s sequential write
- Power Supply: (Low-power CMOS technology)
 - VCCQ 1.7V...1.95V or 2.7V...3.6V eMMC supply / VCC 2.7V...3.6V NAND Flash supply
- Optimized FW algorithms
 - Power-fail data loss protection
 - Wear Leveling technology
Equal wear leveling of static and dynamic data. The wear leveling assures that dynamic data as well as static data is balanced evenly across the memory. With that the maximum write endurance of the device is ensured
 - Read Disturb Management
The read commands per region are monitored and the content is conditionally refreshed when critical levels have occurred
 - Auto Read Refresh
The interruptible background process maintains the user data for Read Disturb effects or Retention degradation due to high temperature effects
 - Diagnostic features with Device Health Report according to eMMC Spec 5.1, and detailed Lifetime Monitor data (Swissbit proprietary, accessible through standard eMMC commands).
 - Field Firmware update³ according to eMMC Spec 5.1
 - Discard and Sanitize, Trim
 - Boot Operation Mode and Alternative Boot Operation Mode
 - Replay Protected Memory Block (RPMB)

¹ Adequate airflow is required to ensure the temperature Tcase does not exceed 95 °C (industrial temperature drive), respectively 115 °C (automotive temperature drive)

² The verification of host system and storage device compatibility is in customer's responsibility. Swissbit can provide guidance and support on request.

³ The support of In-Field FW update capabilities on host systems is recommended. The update must be transferred with a CMD25. For Linux, kernel 4.4 or higher is required.

- High reliability
 - Designed with sophisticated firmware architecture for industrial, automotive and embedded markets.
 - Ideal for application like POS/POI, PLC, IoT, gaming, medical and use as general boot medium for embedded applications.
 - The product is optimized for long life cycle that requires superior data retention as well as power fail safety.
 - Intensive write applications should use the enhanced/reliable mode
 - Controlled BOM & PCN process

Why Swissbit?

Swissbit is focused on the design, development, manufacture, and support of leading edge memory and storage solutions for the worldwide OEM/ODM marketplace. As a global supplier, Swissbit recognizes and addresses the higher level of application requirements of today's industrial, Netcom, and automotive customers by providing best-in-class products and services, with uncompromised attention to driving overall value and quality.

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[SFEM128GB1ED1TO-I-7G-311-STD](#) [SFEM256GB1ED1TO-I-8H-311-STD](#)